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Coexpression of a defensin gene and a thionin-like via different signal transduction pathways in pepper and *Colletotrichum gloeosporioides* interactions.

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The anthracnose fungus, *Colletotrichum gloeosporioides*, interacts incompatibly with the ripe fruit of pepper (*Capsicum annuum*). It interacts compatibly with the unripe-mature fruit. We isolated a defensin gene, *jl-1*, and a thionin-like gene, *PepThi*, expressed in the incompatible interaction by using an mRNA differential display method. Both genes were developmentally regulated during fruit ripening, organ-specifically regulated, and differentially induced during the compatible and incompatible interactions. Expression of the *PepThi* gene was rapidly induced in the incompatible-ripe fruit upon fungal infection. The fungus-inducible *PepThi* gene is highly inducible only in the unripe fruit by salicylic acid. In both ripe and unripe fruit, it was induced by wounding, but not by jasmonic acid. Expression of the *jl-1* gene is enhanced by jasmonic acid in the unripe fruit but suppressed in the ripe fruit. These results suggest that both small and cysteine-rich protein genes are induced via different signal transduction pathways during fruit ripening to protect the reproductive organs against biotic and abiotic stresses.

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